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November 29, 2007

EX PARTE

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, S.W.
Washington, D.C. 20554

Re: Ex Parte Submission in ET Docket No. 04-186

Dear Ms. Dortch:

Lectrosonics, Inc. has supplied two of our UDR700 wireless microphone systems for testing under Docket ET 04-186. In support of these tests we further submit an explanation of the built-in "Link Quality Test Mode" feature of these systems, with instructions for activating this feature and interpreting the BER (bit error rate) readings. This will allow precise measurement of link quality under differing test conditions, so that the impact of potential interfering signals can be evaluated. As always, we stand ready to offer any assistance that may be required by the FCC Laboratory. Inquiries may be directed to me personally.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Robert Cummings", is written over a light blue horizontal line.

Robert Cummings
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700 Series Link Quality Test Mode

The Lectrosonics 700 Series encrypted wireless microphone system works by digitizing audio at the transmitter, compressing and encrypting the data, then sending the bitstream over the air as a series of packets. The receiver recovers the bitstream from the packets, decrypts and uncompresses the data, and finally reproduces the audio.

In the event that the data is corrupted due to RF interference, the recovered audio quality is reduced by some degree. The amount of audible degradation depends on the timing, magnitude and persistence of the data loss.

While it is possible to evaluate the quality and reliability of the system by measuring audio performance under various RF conditions, the system also offers a special link quality test mode, wherein a test pattern is sent in place of the audio, and signal integrity is reported in real time at the receiver. Any data loss that could possibly result in a loss of audio quality is reported.

Activating The Mode

To activate the Link Quality Test Mode, it is necessary to place the transmitter into a special mode, using the hex switches and power on/off switch. The receiver will switch to Link Quality Test Mode automatically, upon detecting the special test pattern from the transmitter.

To place a 700 Series transmitter (either a UM700 or a UT700) into Link Quality Test Mode:

1. Turn the transmitter and receiver on, and verify that the transmitter and receiver interoperate when used normally.
2. Set the transmitter hex switches to **0,0**. It is okay if the receiver mutes.
3. Briefly toggle the transmitter power switch *off*, then *on* again. (Dwell time in *off* position must not exceed 1 second.)
4. Advance the hex switches to **0,1** and toggle power switch again. (First digit is 1.6MHz switch, second is 100kHz switch, so it is the 100kHz switch which changed from **0** to **1**.)
5. Advance the hex switches to **0,2** and toggle power switch again.
6. Advance the hex switches to **0,3** and toggle power switch again. If all went well, after a second or two, the audio level LEDs should begin flashing red in an alternating sequence. This is a special diagnostic mode that allows important factory settings to be overridden. Please follow directions carefully whenever you see the flashing red lights.
7. Toggle the transmitter power switch again. The audio level LEDs should return to normal operation. (They will be off if no audio is present.)
8. Reset the transmitter hex switches to desired operating frequency and verify acquisition of signal by the receiver. It is okay if the security keys don't match and/or audio is not received, so long as the two digit hexadecimal channel display on the receiver stops blinking and one or more rotavarsity LEDs light up.

9. Toggle the transmitter power switch again. After a second or two, the blinking red LED sequence returns.
10. Being careful to move *only* the 1.6MHZ hex switch, turn the 1.6MHZ hex switch to **B**. The red LEDs continue to blink in sequence.

The system (transmitter and receiver) is now in Link Quality Test Mode. Instead of the normal audio data being transmitted, a special test pattern is sent. The receiver knows the pattern and reports any errors on the audio level bargraph meter. Experiment with moving the antennas so that the received signal varies between 1 and 5 LEDs on the RF meter. Any indication on the audio meter means bad bits were detected. The audio meter scale is base-two logarithmic. These are the number of bad bits per packet. A single LED indication represents a BER of approximately 10^{-4} . Four LEDs mean approximately 10^{-3} . Seven LEDs correspond to an error rate of 10^{-2} , and full scale indicates 10^{-1} . Any of these error rates can cause audible defects.

Note: The audio meter goes dark (all LEDs off) during a complete signal drop-out, so a lack of indication only implies error free operation while the connection remains active, i.e. the receiver's hex channel display is steady and the rotaversity indicator remains lit.

Deactivating The Mode

To deactivate the special mode, simply power the transmitter off (allowing a second for the LEDs to go out), then power it back on again to resume normal operation.

*26 November 2007
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